1855MNRAS..15..226.

Observations made in 1851, to determine, by means of the Electric Telegraph, the Difference of Longitude between Halifax Dockyard Observatory and Harvard Observatory, Cambridge, Massachussets, U.S.

(*Communicated by the Astronomer Royal.*)

The observatory in the Naval Yard at Halifax was placed in communication with the observatory at Bangor (Maine), and at Cambridge (Mass.) by means of the electric telegraph.

On the 25th of November, 1851, the break-circuit clock was put in operation at Bangor, and compared with a sidereal chronometer at Halifax, but the weather was too cloudy for observations, and continued so until the 16th of December.

The instruments used were four-feet portable transits, by Troughton and Simms, belonging to the United States Coast Survey, having each twenty-five vertical wires arranged in five groups of five wires each, and one horizontal wire through the centre, at the principal focus of the object-glass.

The time was defined by the clock at Bangor breaking circuit every second, which, together with the observations, were recorded on the registers at each place.

The following are the results of observations made on the 16th December, 1851:—

By Bangor Clock.

	h	m	s
B.A.C. 1287, passed M^{n}. Halifax, lamp W.	3	43	36·84
— — Camb. — E.	4	13	46·47
Halifax, east of Camb.		30	9·63
B.A.C. 1736, passed M^{n}. Halifax, lamp E.	5	4	39·87
— — Camb. — W.	5	34	49·49
Halifax, east of Cambridge		30	9·62
Mean free from collimation error		30	9·625

	m	s
Bangor clock slow of Halifax by 1414, lamp W. (12 wires) ...	20	26·44
— — — 1476, — (25 wires) ...		26·15
Meaning half effect to No. of wires	20	26·27
Bangor clock slow of Halifax by 1540, lamp E. (25 wires) ...	20	26·60
Meaning lamp E. with lamp W., frees collimation	20	26·435

	m	s
Bangor clock fast of Cambridge by 1364, lamp E. (25 wires) ...	9	43·31
— — — 2429, — — ...		43·54
— — — 2504, — — ...		43·17
Mean, lamp E.	9	43·34

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	m s
Bangor clock fast of Cambridge by 2338, lamp W. (25 wires) ...	9 42·79
— — — 2691, — — ...	9 43·21
Mean, lamp W.	9 43·00
Meaning lamp E. with lamp W. frees collimation	9 43·17
	m s
Hence Bangor clock slow of Halifax	20 26·435
— — fast of Cambridge	9 43·170
Halifax, east of Cambridge	30 9·605

By direct observations on B.A.C. 1287 and 1736, Halifax Naval Yard Observatory is east of Cambridge (Harvard Observatory), $30^{m}\ 9^{s}{\cdot}625$. By indirect observations, $30^{m}\ 9^{s}{\cdot}605$. Taken, $30^{m}\ 9^{s}{\cdot}62$.

The transit instrument was 94·7 feet west of Cambridge east transit, that to which the longitude of the observatory is referred.

Therefore Halifax Naval Yard Observatory is $30^{m}\ 9^{s}{\cdot}54$ east of Cambridge (Harvard Observatory, east transit).

At this point Professor Bond was taken dangerously ill, and we were unable in consequence to correct again with Cambridge. Observations were made on the 17th, 19th, 22d, and 23d December, between Halifax and Bangor. The weather was generally unfavourable, and also the state of the telegraph; however, the observations tended to confirm the above result, which cannot be far from the truth.

The mean distance determined by Admiral Owen during 1841, 1844,* and 1845, with chronometers, in which I assisted, was $30^{m}\ 9^{s}{\cdot}9$.

	h m s
Harvard East Transit being taken West of Greenwich	4 44 30·54
Halifax, east of Harvard (east transit)	30 9·54
Halifax Observatory west of Greenwich	4 14 21

P. Frederick Shortland,
Commander.

Elements of Comet I., 1855. By M. Winnecke.†

T	1855, Feb. 5, 76590.			
	°	′	″	
π	226	33	4·6	Equinox 1855, Jan. 0.
☊	189	40	8·6	
i	51	12	41·2	
Log q ...	0·341478			

Motion retrograde.

These elements are calculated from the Moscow observation of April 19, and the Berlin observations of May 6 and May 18.

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* In the determination of the longitude of Harvard Observatory the greatest weight has been given to the result of numerous chronometers run between Liverpool Observatory and that at Harvard, by means of the Cunard steamers, in which Liverpool Observatory is taken as $12^{m}\ 0^{s}{\cdot}5$ west of Greenwich.

† Discovered by M. Schweizer on the 11th of April; see p. 174, where for Comet II., read Comet I.—Editor.

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